

Applications (NGI Goal 3)



PITAC NGI Review

NSF Presentation

William F. Decker

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Overview



- Applications activity within the 100X community
- Projects specifically funded by CISE
- High Performance Network Applications Team (HPNAT)
- New ANI program directions vis-à-vis applications

Applications in the 100X Domain



■ Examples:

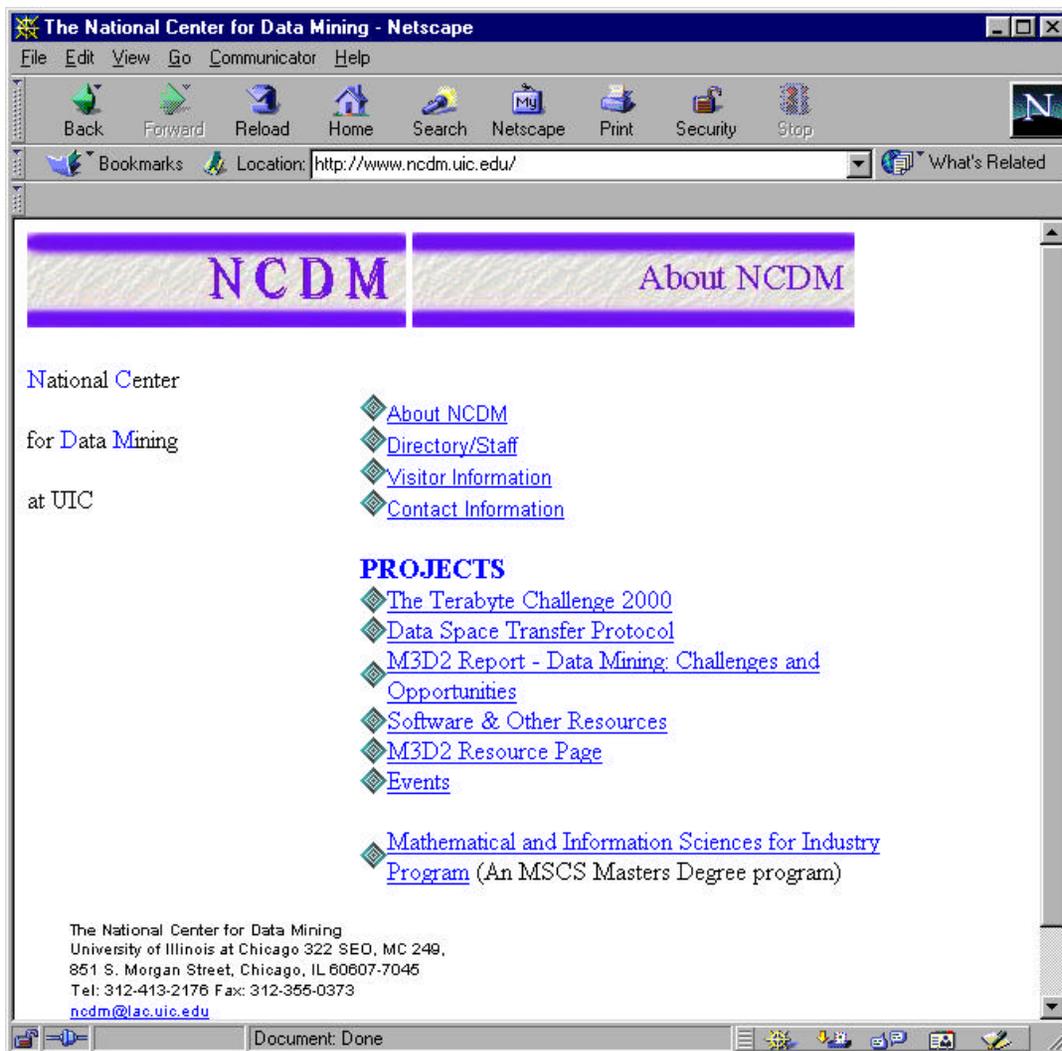
- Illinois-Chicago (Grossman): data mining
- Oklahoma (Droegemeier): weather research
- North Carolina (Smith, Jeffay): nano-manipulators
- UC San Diego (Ellisman): international microscopy

■ Messages:

- This initiative is about more than bandwidth
- Researchers are attempting things on this network that they might not have attempted on the Internet

University of Illinois at Chicago

(www.ncdm.uiuc.edu)

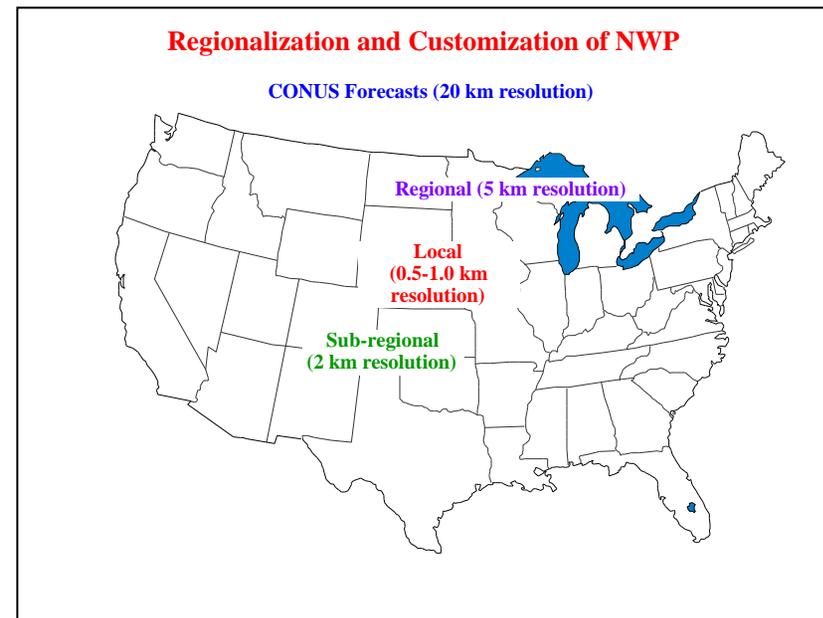
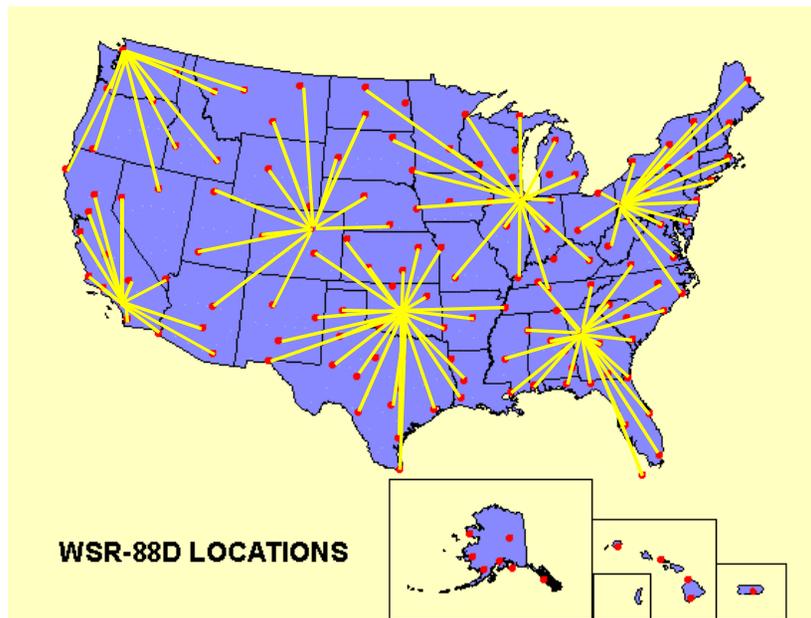


- Goal: extract information from massive, distributed, disparate sources
- DSTP: Data Space Transfer Protocol
- “Most Innovative of Show” at SC98
- Several applications results to date

University of Oklahoma

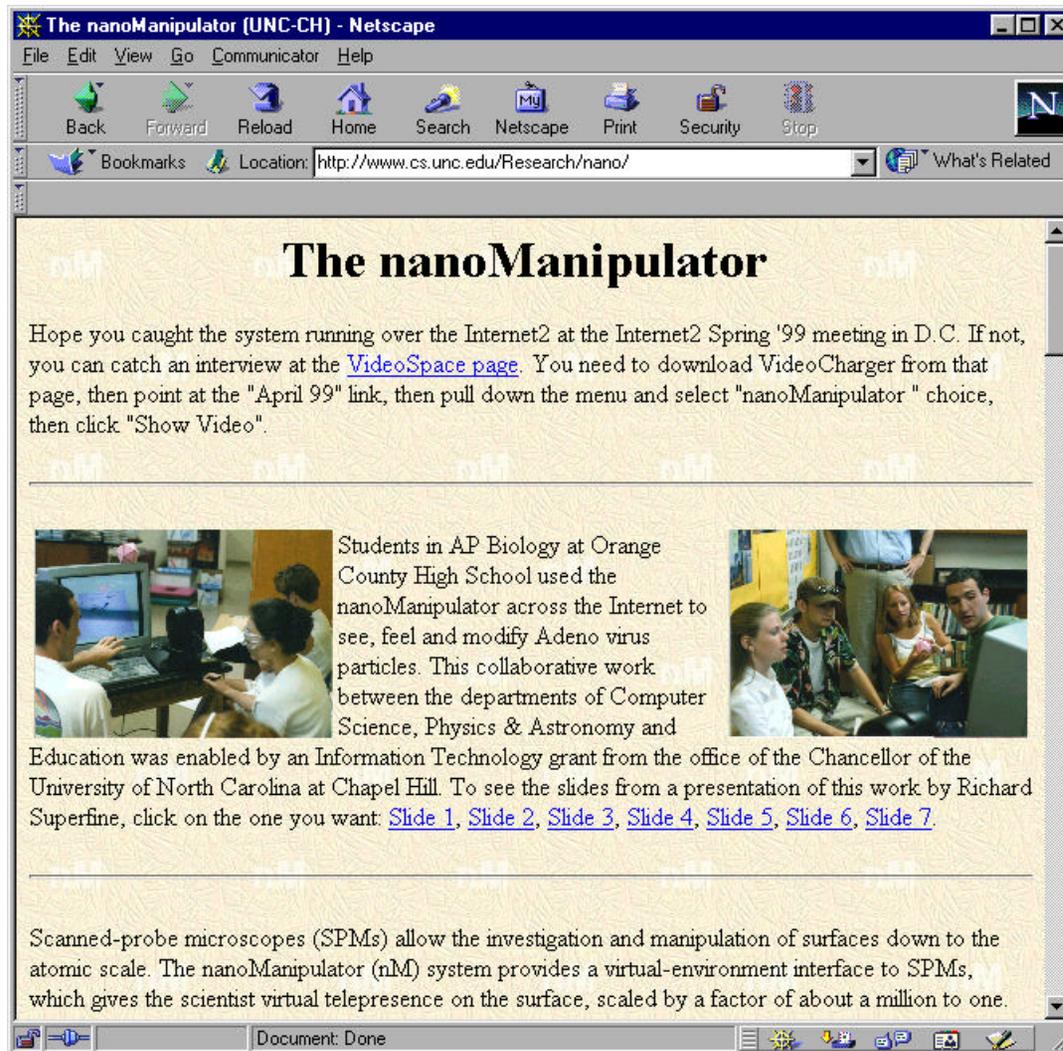
(www.caps.ou.edu)

- Distributed data acquisition (NEXRAD radars)
- Distributed dynamic computing
- Distributed decision making and data dissemination
- Intelligent networking and data routing



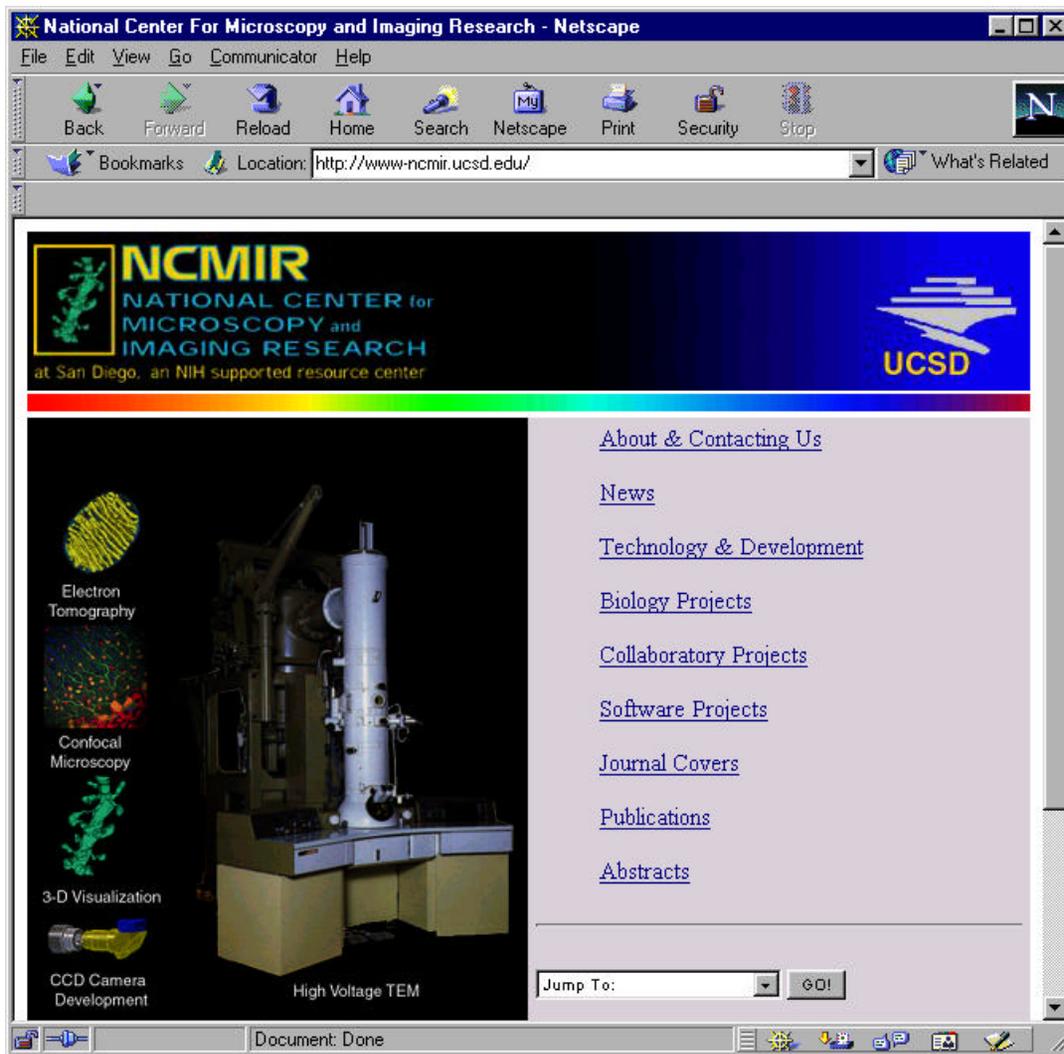
University of North Carolina

(www.cs.unc.edu/Research/nano)



- VR interface to "see/feel" atomic structures
- Strict latency requirements
- Sustained bandwidth requirements
- Low loss tolerance

UC San Diego (www-ncmir.ucsd.edu)



- International work
- High throughput (35Mbps)
- Remote instrument control
- Multiple "channels" for controls and images

For more examples of work on the 100X network:



- **NLANR newsletter and featured applications:**
[http://www.nlanr.net/NLANRPackets/NLANR database](http://www.nlanr.net/NLANRPackets/NLANR_database)
- **FY99 award abstracts:**
<http://www.interact.nsf.gov/cise/abst.nsf/anirabst98?OpenView>
- **Comprehensive list of HPC awards:**
http://www.interact.nsf.gov/CISE/ASC/CISEWeb.nsf/program_ani?OpenView&Count=500
- **Internet2 applications and related information:**
<http://www.internet2.edu/html/news.html>

NLANR



- Campus support: network engineering, applications tuning, applications training
- Workshops: regional and national engineering and applications forums
- Focused efforts: Web100, OpenGL, FTP
- Performance measurement
- See: <http://www.nlanr.net/>

CISE Applications Awards



- EIA (Experimental and Integrative Activities) - \$2M
 - Tennessee: Logistical QoS through Application-driven Scheduling of Remote Storage
 - Oregon Graduate Institute: CARE: Accessible Language Resources for Research and Education
 - Pennsylvania/Boston: National Center for Sign Language and Gesture Resources
 - USC: Advanced Semiconductor Technology Access for Educational Use

CISE Applications Awards



■ IIS (Information and Intelligent Systems)

- \$2M

- Stanford--Digital Libraries Technologies Project
- Cornell--Project Prism at Cornell University: Information Integrity in Digital Libraries
- Arizona--High-Performance Digital Library Classification Systems: From Information Retrieval to Knowledge Management

CISE Applications Awards



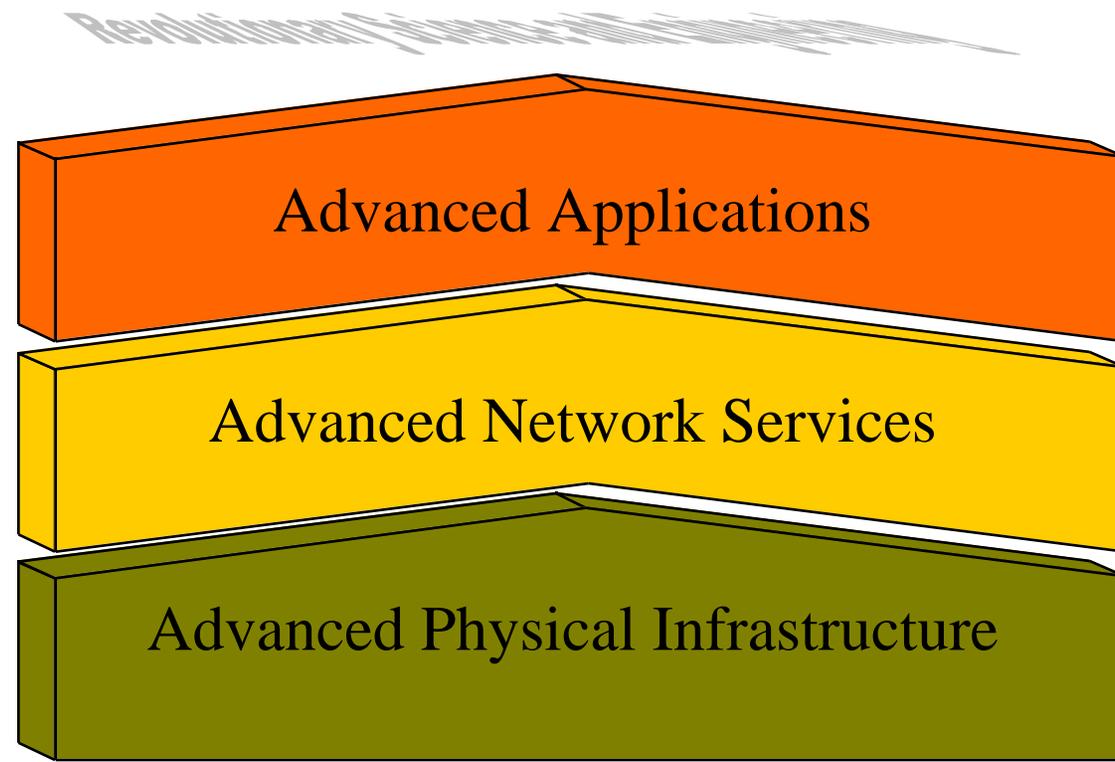
- ACIR (Advanced Computation Infrastructure and Research) - \$3M
 - NPACI: Data Intensive Computing Support and Digital Libraries for NGI Applications
 - PACI: Persistent Globus Testbed
 - PACI: Integrating NT Clusters with the Grid
 - PACI: Very Large Distributed Databases
 - PACI: Remote Instrument Control and Image Processing: End-to-End Quality of Service
 - PACI: Grid Security and Privacy
 - PACI: Distributed Storage and I/O Using Networked NT Clusters

High Performance Network Applications Team (HPNAT)



- Agencies participating: DARPA, DOD, DOE, NASA, NIH, NIST, NOAA, NSA, NSF, VA
- Collaboration examples:
 - Bridging the Gap Workshop
 - DOE Collaboratories Workshop
 - Virtual Collaboratories Workshop
 - SC99 demonstration coordination
 - DOE NGI PI meeting

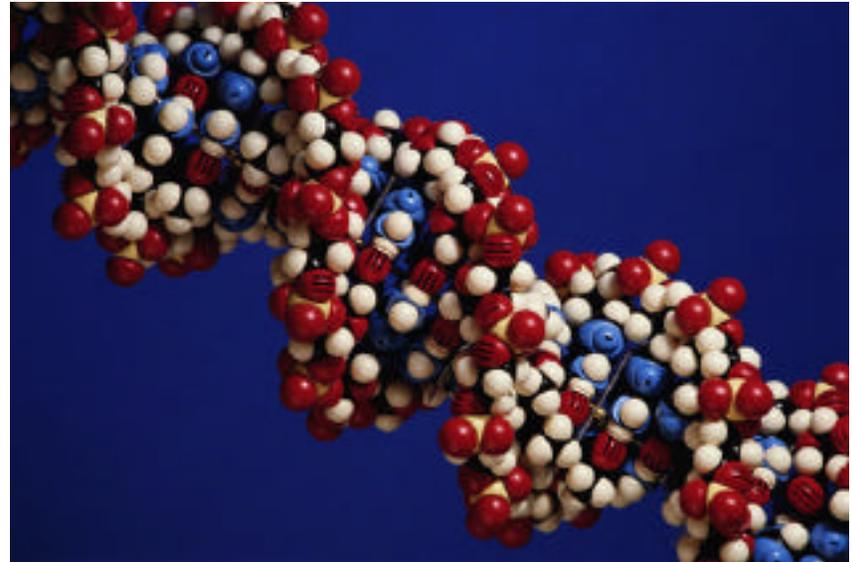
NSF ANI Program Directions



ANI Future Program: SPIRAL

■ SPIRAL:

Synergistic
Promotion of
Infrastructure,
Research, and
Applications
Linkages



SPIRAL Program



- Establish a system of advanced network services
- Establish support services and an overall system management/control function
- Support collaborative applications development based on access to these services
- Coordinate in a symbiotic way with the Advanced Network Research program